ABSTRACT

An optical amplifier is provided for performing amplification of optical signals of two wavelength bands, where deterioration in the optical SN ratio relative to one wavelength band is reduced, with a simple construction which can deal with restrictions on installation space, power consumption and the like. To this end, the present optical amplifier has a C/L band optical amplifying section for amplifying respective optical signals of a C band and an L band, a demultiplexer for demultiplexing output light from the C/L band optical amplifying section into the C band and the L band, an L band optical amplifying section for amplifying L band optical signals which have been demultiplexed by the demultiplexer, and a multiplexer for multiplexing the C band optical signals which have been demultiplexed by the demultiplexer and the L band optical signals which have been amplified by the L band optical amplifying section. The construction is such that a part of excitation light of a 1480nm band used in the C/L band optical amplifying section is supplied via an input terminal to a Raman amplification producing medium of a transmission path, and Raman amplified L band optical signals are input to the C/L band optical amplifying section.